Assisting Rolette County with Road Centerline Data Development

Presented to:

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PRESENTATION TOPICS

- **Project Background**
- **Project Approach**
- **Project Outcomes**

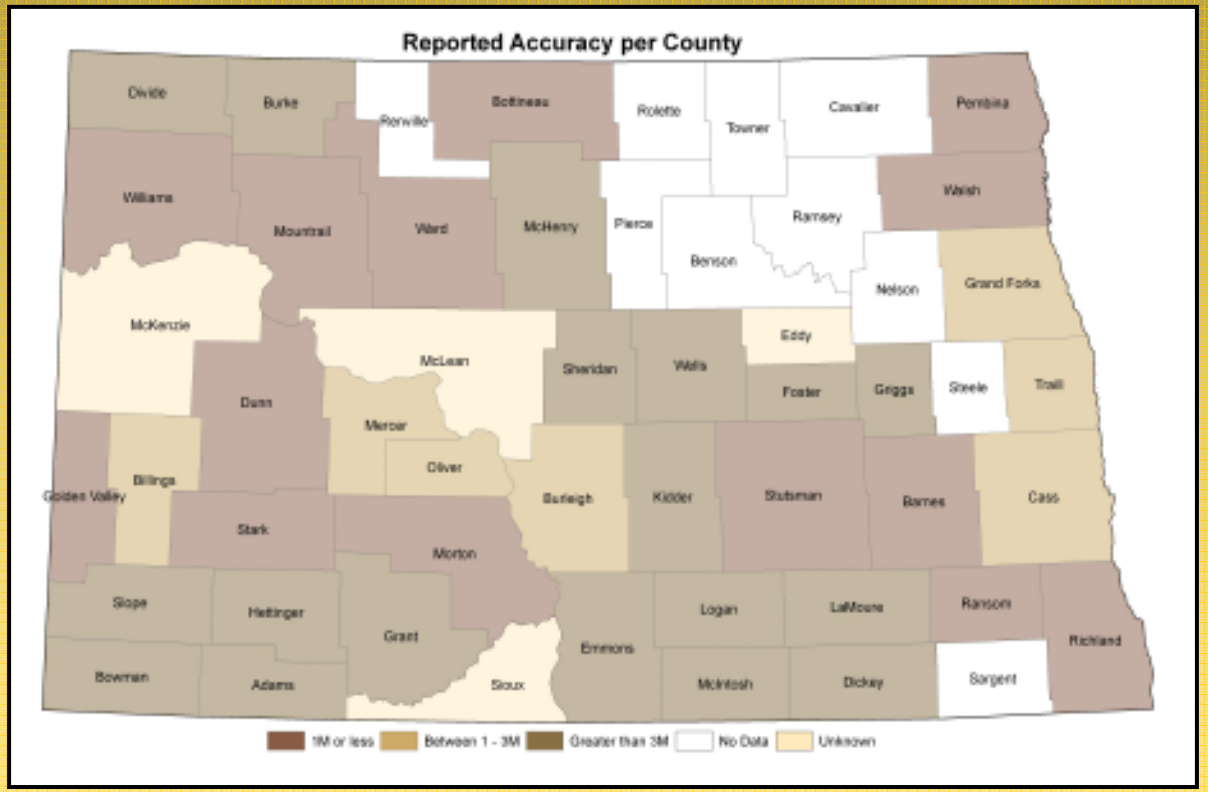
PROJECT BACKGROUND

ISSUES

- **E911 Dispatch System**
- **Costs**

OPPORTUNITIES

- **GPS Equipment**
- **GIS Software**
- **GIS Data**
- **County GIS**
- **Maintain System**



Source – ND GISTC Road Centerline Study, GeoComm

PROJECT APPROACH

- **Data Assessment and Planning**
- **Data Development**
- **Data Assurance**
- **Training**

SCOPE OF SERVICES

GIS Data Collection and Development
Rolette County Sheriff's Department

Background

The Rolette County Sheriff's Department (County) has verbally committed to the purchase and installation of Bullberry Systems R3 Dispatch System. This Dispatch System will provide the County with a user-friendly application for dispatchers to use as an aid in mapping for
dispatching and routing emergency units to locations more efficiently. The R3 Dispatch System functions on geographic Information System (GIS) data. However, the availability of complete and accurate GIS data within the County is not Aavailable. This includes road centerline and address data.

The County has considered available options including the costs and benefits of developing the data internally, or contracting the work out. The County has made the decision to develop the data internally with assistance from Houston Engineering, Inc. (HEI). Therefore, HEI is pleased to prepare and submit this GIS Data Collection and Development Proposal to the County. The purpose of this proposal is to provide a Scope of Services to assist the County in their efforts to build GIS mapping layers to meet the data requirements of the proposed R3 Dispatch System

Scope of Services

The Scope of services under this Agreement includes the proposed phased HEI agrees to complete. The estimated compensation For this contract is listed by phase below. The compensation is not-to-exceedthe total amount for all tasks without written approval

Phase 1: Data Assessment and Planning

HEI staff will meet with the County to conduct an assessment of available GIS data and create a Data Development Plan to follow for the collection, development and integration of GIS data into the proposed R3 Dispatch System. The purpose of this phase is to review the primary mapping layers necessary for the R3 Dispatch System to function and determine the best method of developing data. This includes GPS collection, data integration, or digitizing of road centerlines, emergency service zones and responder locations. Secondary mapping layers including address points, landmarks, and flood zones will also be addressed and included in the Data Development Plan. The meeting will include representatives from both Public-Safety Answering Points (PSAPs) in the County: 1) the County Sheriff's Department; and 2) the Turtle Mountain Band of Chippewa Bureau of Indian Affairs Office (BIA). Listed below are the tasks of the meeting:

Tasks:

Review the primary mapping layer requirements as listed in the R3 Dispatch System General Requirements document.
Review existing address list and map maintained by the County E911 Coordinator.
Review available GIS data maintained by BIA related to residences and road networks.
Review existing GIS structures and water user data inventoried and maintained by HEI.
Recommend data collection methods for road centerlines based on the review of existing information accuracy and the general requirements specifications of the R3 Dispatch System.
Determine GPS data collection parameters, methods and processes for road centerlines.
Identify optimized routes for GPS collection activities of road centerlines

DATA ASSESSMENT AND PLANNING

Tasks

- **Review E911 system requirements**
- **Review existing address maps**
- **Review available GIS data maintained by BIA**
- **Review ND GISTC Road Centerline Study**
- **Determine type of data for collection**
- **Recommend data collection methods**
- **Determine GPS data collection parameters**
- **Data Development Plan**

North Dakota GISTC Road Centerline Study

March 2007

DATA DEVELOPMENT

Tasks

- **Route Planning**
- **Directory Structures**
- **Base Map**
- **Data Setup**
- **Data Collection**
- **GPS Parameters**

DATA DEVELOPMENT PLAN

GIS Data Collection and Development
Rolette County 911 Department

Background

The Rolette County 911 Department will be responsible for data collection efforts and development of GIS data including road centerlines. This road centerline data will be used as a primary mapping layer for the implementation of Bullberry Systems R3 Dispatch System. To successfully accomplish this task, a Data Development Plan will be prepared and provided to the County. This document will outline data collection procedures necessary for the collection of this data, and the development of GIS road centerline files.

Route Planning

Road centerline data collection will be accomplished by collecting GPS data for all roads of an individual Township. This includes State Highways, County Highways, County Roads, BIA Roads, Township Roads, and Minimum Maintenance Roads. Reference maps and GPS Base maps have been prepared and provided to the County for use during data collection route planning. Various factors will influence on how efficient and successful data collection route planning will be. These factors include safety, accuracy and time

1. Safety

Safety should be the primary focus on the data collection efforts. Therefore, factors including road conditions and vehicle traffic should also be considered and evaluated when determining which Township to collect data for. When approaching a road intersection, it is not necessary to drive and stop at the intersection. Data cleanup will resolve the gap created when stopping GPS collection in advance of the road intersection

2. Accuracy

Accuracy of data collection is desired and will require close attention to specific parameters and settings of the GPS device. This includes the number of satellites available, the PDOP and driving methods. Before each data collection effort, staff should open the GPS Utilities, GPS Status and Mission Planning options. Verify the number of satellites (green line) available is higher than average, and that the PDOP (red line) is below normal and will not affect the accuracy for the hours of data collection. Other factors including offsets and collection intervals will also affect accuracy. These parameters are provided in the GPS Data Collection section of this Plan.

3. Time

Time to collect this data for each Township should range from 2-4 hours. Factors including road conditions, vehicle speed, traffic and the number of road segments can result in various adjustments and increased time to collect GPS data. These adjustments are provided in the GPS Data Collection section of this Plan.

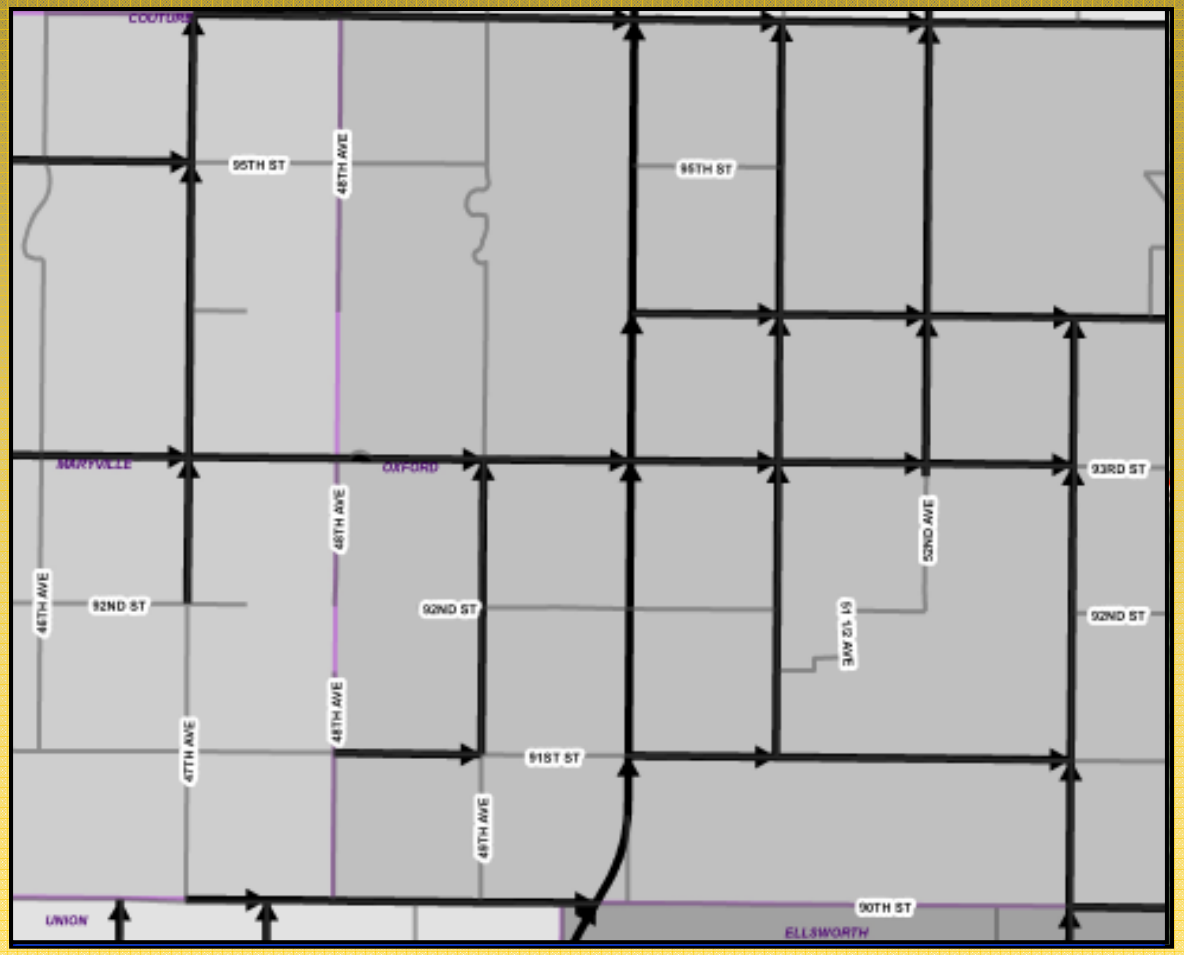
Directory Structure

Directories have been created and setup for use during the data collection efforts. These directories are used for office and field purposes of data visualization. The directories have been organized to enable efficient data transfer between the office PC and the GPS unit. A flash drive has been designated as the storage device for these files. Below are the directories:

QUALITY ASSURANCE

Tasks

- **Topology**
- **Directionality**
- **Database**
- **Missing Segments**



TRAINING

GIS Software

- Operation of ArcMap
  - Editing
  - Adding layers
  - Attribution
- Operation of ArcPad
  - Adding Layers
  - Changing Symbology
  - Data Transfer

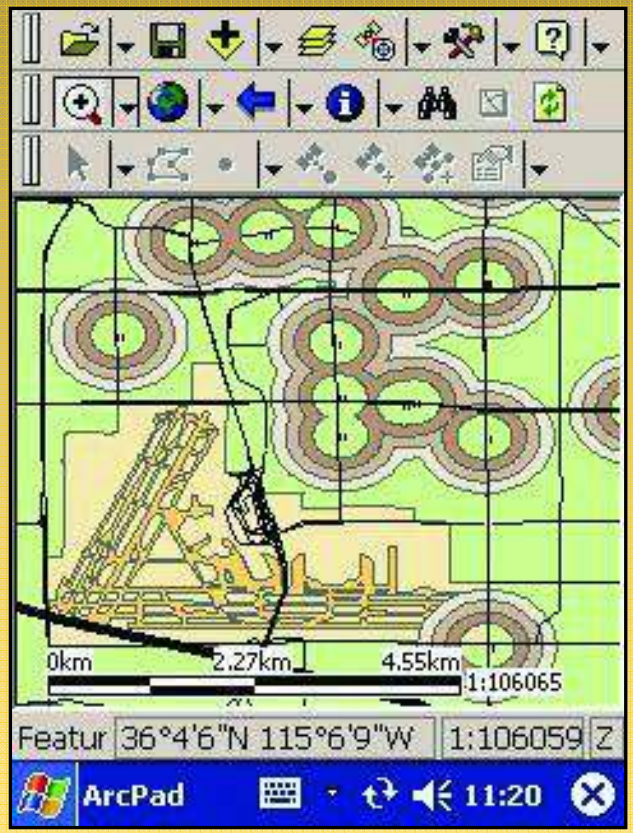
GIS Equipment

- Operation of Magellan Unit
- Data Collection Procedures
- Data Transfer Procedures

FTP – Data Transfer

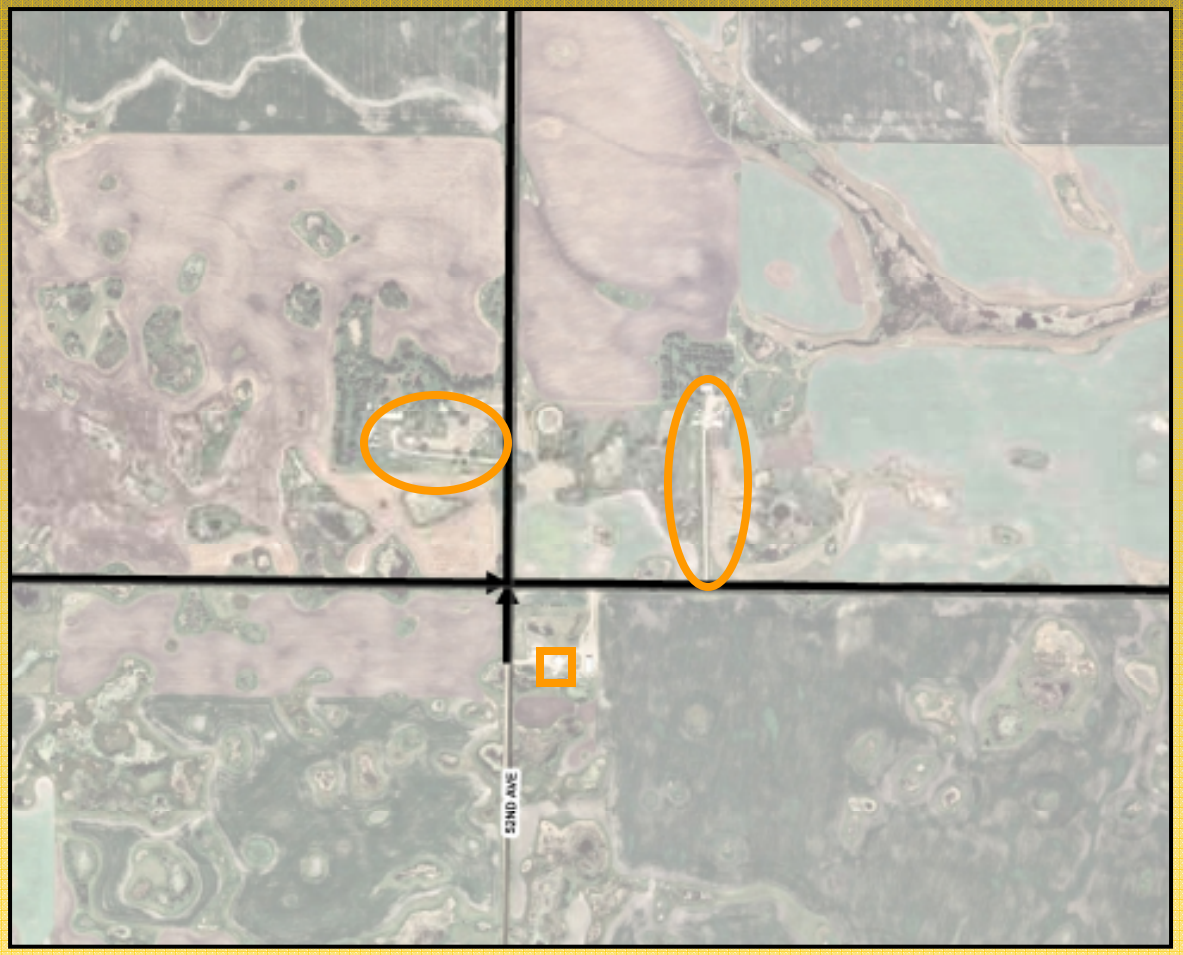
GPS UNIT ISSUES

- **GPS Equipment**
  - Accuracy
  - Collection Intervals
  - Number of Satellites
- **ArcPad**
  - Operation
  - Editing
  - Start/Stop



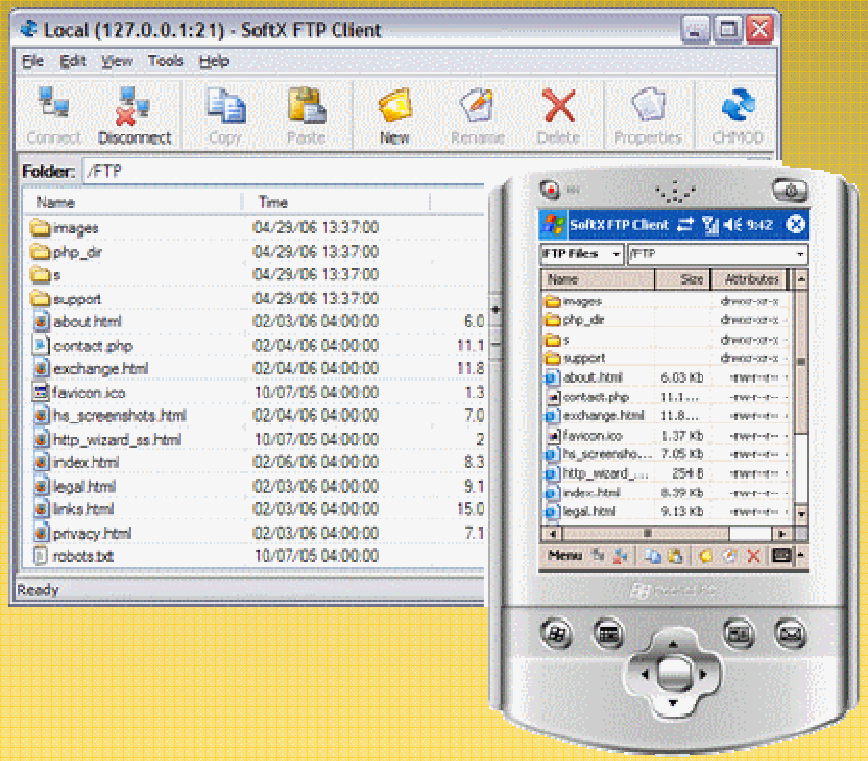
DATA COLLECTION ISSUES

- Vehicle Availability
- Time Availability
- Road Conditions
- Road Segments
  - Driveways
  - Dead End Roads



DATA DEVELOPMENT ISSUES

- **GIS Software**
  - **Map File Locations**
  - **Feature Editing**
- **File Transfers**
- **Communication**
- **Time**
- **County Parcels**



TIMELINE ISSUES

- **Data Collection**
  June to August
- **Addressing**
  September to December
- **Testing**
  December to January

DATA COLLECTION EXAMPLE #1

DATA COLLECTION EXAMPLE #2

DATA COLLECTION EXAMPLE #3